

EDGE PC Barebone SPCEL12

ROBUST 0.5L IPC SUPPORTS THREE DISPLAYS AND OPTIONAL 4G

The Shuttle Edge PC SPCEL12 is a fanless Industrial PC barebone in a robust metal chassis and intended for VESA mounting. It is flexible in use and de-signed for maintenance-free 24/7 operation at ambient temperatures of up to 40°C. Inside there is an Intel Celeron "Elkhart Lake" processor with slots for RAM module, M.2 SSD card and optional WLAN or 4G card. The small housing offers an amazing variety of connections, including three graphics ports, dual LAN, Audio, and slots for Micro SD and Nano SIM. This product is targeted at professional applications such as digital signage (media player), edge computing (IoT gateway), automation, control, data logging and video surveillance.



INDUSTRIAL DESIGN

- Rugged aluminum chassis (purple) ■ Weight: 1250/1500 g net/gross
- Dimensions: 120 x 75 x 51 mm (WDH), 460 ml
- VESA mount 100x100 mm ■ Supports 24/7 Nonstop Operation
- Operating temperature: 0 ... 40 °C (20-80% RH, non-condensing)

OPERATING SYSTEM

- An operating system is not included
- Supports Windows 10, Windows 11 and Linux (all 64-bit)
- Windows 10/11 Driver Download: <https://go.shuttle.eu/SPCEL12>

PROCESSOR

- Intel Celeron J6412 "Elkhart Lake", 4-core, 2.0~2.6 GHz, TDP: 10 W
- Soldered System-on-Chip processor (SoC) ■ Passive Cooling

MEMORY/STORAGE/M.2 slots

- One 260-pin SO-DIMM slot supports up to 32GB DDR4-3200 RAM
- One M.2-2242/2280 M slot supports M.2-SSDs with SATA interface
- Supports one M.2-2230 WLAN card or one M.2-3042 4G card
- Note:** If a WLAN or 4G card is installed, then the M.2-SSD card is limited to M.2-2242 format. Two external antennas can be installed.

CONNECTORS

- 2x HDMI 2.0b ■ DisplayPort 1.4 ■ 2x USB 3.2 Gen2 ■ 1x USB 2.0
- 2x 2.5G RJ45 LAN-Ports (Intel 226V) ■ 2x Audio (Mic-Input, Line-out)
- Micro-SD card reader ■ Nano SIM Slot ■ DC Input ■ Power Button, LED

POWER SUPPLY

- The DC input for 5.5/2.5 mm barrel plug supports an extended input voltage range of 12 - 20V
- External power supply included: 65W / 19V

OTHER

- Hardware TPM 2.0 module Infineon SLB9670VQ2
- EMC certifications: CE, FCC, VCCI, BSMI, EN 50121-3-2
- Safety certifications: CB/IEC62368-1:2014/2018, cTUVus/UL62368-1:2019 ■ Vibration and shock: EN61373, MIL-STD-810G
- Warning of hot surface: risk of burns!

OPTIONAL SHUTTLE ACCESSORIES

- **WLN-M3** - WLAN kit with Intel AX200 module supports WiFi 6/BT 5.2, including two 10-cm antenna cables and two external antennas
- **CLT02** 4G Antenna Kit including two ext. antennas and antenna cables
- **MDR02** - DIN-Rail Mounting Kit
- **HDD01** - Additional 2.5" bay for a SSD with SATA interface



MODELS OF THE SPCELxx/SPCNVxx EDGE PC SERIES

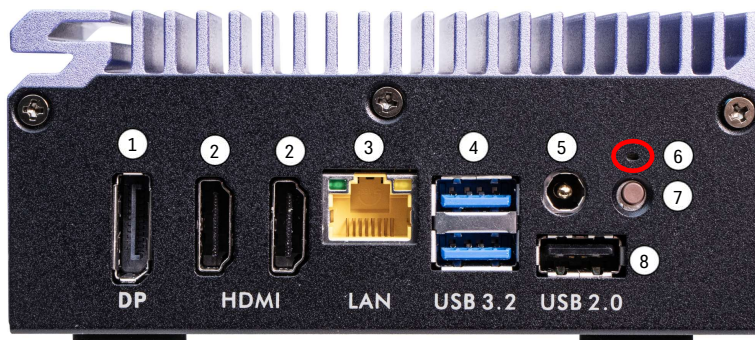
Product UPC-Code	PoE Function	Operating Temperature	SoC Processor (soldered)	Front I/O	Rear I/O	Mounting	DC-Input
SPCEL02 887993007212	—	0 ... 40 °C	Intel Celeron J6412 (4-core, 2.0-2.6 GHz, 10 W)	1x HDMI 2.0, 2x USB 3.2, 1x USB 2.0 2x 2.5G LAN	COM (RS232/422/485) DIO: 4x in, 4x out	VESA mount & DIN-Rail	12-24 V DC Power adapter <u>not</u> included
SPCEL02P 887993602240	PoE(PD) 1)						
SPCEL03 887993007229	—	-20 ... 60 °C 2)	Intel Atom x6413E (4-core, 1.5-3.0 GHz, 9 W)	2x HDMI 2.0, 1x DP 2x USB 3.2, USB 2.0 2.5G LAN	2.5G LAN, 2x Audio Nano SIM (opt. 4G) Micro-SD card reader	VESA mount	12-20 V DC Power adapter is included
SPCEL12 887993007243	—	0 ... 40 °C	Intel Celeron J6412 (4-core, 2.0-2.6 GHz, 10 W)				
SPCNV03 Coming Soon	—	-20 ... 55 °C	NVIDIA Jetson Orin Nano 8 GB RAM, 40 TOPS AI-Perf.	1x HDMI 1.4b, 2x USB 3.2, 1x USB 2.0 2.5G+1G LAN	COM (RS232/422/485) DIO: 4x in, 4x out	VESA mount & DIN-Rail	12-24 V DC Power adapter <u>not</u> included
SPCNV13 Coming Soon			NVIDIA Jetson Orin NX (w. fan) 16 GB RAM, 100 TOPS AI-Perf.				

1) **SPCEL02P:** The PoE feature allows this Edge PC to be powered over the LAN cable and thus it becomes a "Powered Device" (PD).

2) **SPCEL03:** at ambient temperatures >40°C, the RAM memory module and SSD card must support the extended temperature range (-40...+85 °C)

Front and Back Panel

Front panel



1. DisplayPort 1.4
2. 2x HDMI 2.0b port
3. 2.5G LAN port (RJ45, Intel 226V)
4. 2x USB 3.2 Gen 2 port (Type-A)
5. DC-input (2.5/5.5 mm) supports 12-20V
6. LED indicator for power state
7. Power button
8. USB 2.0 (Type A)

Back panel

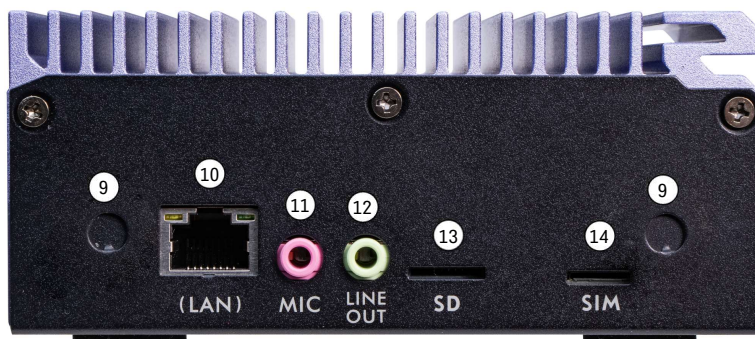


Photo with optional antennas

9. 2x perforation for external WLAN antenna
10. 2.5G LAN port (RJ45, Intel 226V)
11. Microphone Input
12. Audio Line-out
13. Micro SD card reader slot
14. Slot for Nano SIM card

Bottom side



15. Four rubber feet
16. Rating label



Warning of hot surface: risk of burns!

REQUIRED COMPONENTS

The following components need to be added to make it a fully-configured Edge PC

Shuttle Edge PC Barebone SPCEL12



Memory Module (RAM)

supports one SO-DIMM memory module (260-pin)
DDR4-3200, max. 32 GB

M.2-2242
L: 42 mm



M.2 SSD card (SATA)

supports one M.2-2242 SSD card
with SATA interface (not PCIe/NVMe)

M.2-2280
L: 80 mm



Note: A longer M.2-2280 card is also supported,
if no WLAN or 4G module is installed.



Operating System

Windows 10/11 or Linux (64-bit only)

ACCESSORIES INCLUDED



VESA Mount

Supports 100x100 mm VESA mounting

Power Adapter

DC output: 19 V / 65 W

AC power cable with earth-contact

OPTIONAL ACCESSORIES FROM SHUTTLE



WLAN Kit **WLN-M3**

Wi-Fi 6 WLAN card including
two external antennas.

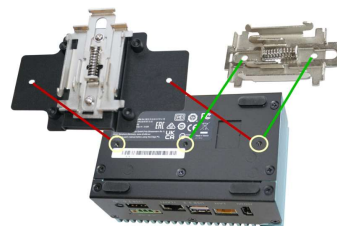
Note: If a WLAN module is in-
stalled, then the M.2-SSD card
is limited to M.2-2242 format
(with 42 mm length).



4G-Antenna Kit **CLT02**

consisting of 2 antennas and 2
antenna cables 10cm)

Note: not included: M.2-3042
4G/LTE card and nano SIM
card. After the installation of a
4G/LTE card the M.2-SSD card
is limited to M.2-2242 format
(with 42 mm length).



DIN-Rail-Kit **MDR02**

DIN-Rail clip for mounting the
Edge-PC SPCEL12 on a DIN-
Rail, e.g. in control cabinets.



2.5" bay for SSD drive **HDD01**

Additional 2.5" drive bay is at-
tached to the Edge PC and
supports one 2.5" SSD drive
with SATA interface.

Available in Shuttle's Systems
Configurator: shop.shuttle.eu.

Note: WLAN (WLN-M3) and 4G/LTE (LCT02) cannot be used at the same time.

SHUTTLE SPCELxx EDGE PC Series — Comparison

	SPCEL02 SPCEL02P (PoE)	SPCEL03	SPCEL12
Color	Turquoise (Blue-Green)	Dark Grey	Purple
Operating Temperature	0 ... 40 °C Fanless cooling	-20 ... 60 °C Fanless cooling	0 ... 40 °C Fanless cooling
Processor	Intel Celeron J6412 4-core, 2.0-2.6 GHz, 10 W	Intel Atom x6413E 4-core, 1.5-3.0 GHz, 9 W	Intel Celeron J6412 4-core, 2.0-2.6 GHz, 10 W
RAM Slot	SO-DIMM slot supports max. 32 GB DDR4-3200		SO-DIMM slot supports max. 32 GB DDR4-3200
M.2 Slots	SSD: M.2-2242/2280 slot supports M.2 SSD card with SATA interface WLAN: M.2-2230 for WLAN card *)		SSD: M.2-2242/2280 slot supports M.2 SSD card with SATA interface WLAN: M.2-2230 for WLAN card *)
4G Slot	—		M.2-2242 slot supports 4G mobile network card (30x42 mm) *)
Front View			
Front Connectors	Power Button Power LED HDMI 2.0b 2x USB 3.2 Gen 2 Type A USB 2.0 Type A 2x LAN port (2.5 Gbps) DC input (supports 12-24V)		Power Button Power LED 2x HDMI 2.0b 1x DisplayPort 1.4 2x USB 3.2 Gen 2 Type A USB 2.0 Type A LAN port (2.5 Gbps) DC input (supports 12-20V)
Rear View			
Rear Connectors	Serial Port (RS232/422/485) Digital I/O ports (4x input, 4x output) 2x hole for optional WLAN antennas		LAN port (2.5 Gbps) 2x Audio (Mic-in, Line-out) Micro SD card reader slot Nano SIM slot (for mobile network) 2x hole for opt. WLAN/4G antennas
DC Input Power Adapter	DC Input supports 12-24V Euro block port with screw terminals Incl. adapter cable for 2.5/5.5 mm Power adapter not included		DC Input supports 12-20V Connector: 2.5/5.5 mm 65W power adapter included
PoE Function	SPCEL02: No SPCEL02P: Yes, supports PoE	No	No
VESA Mount	50x50 and 100x100 mm		100x100 mm
DINRail Mount	Including DINRail Clip		—
Optional Accessories	1) WLAN-Kit with two antennas 2) 2.5" bay for SSD with SATA 3) 65W power adapter		1) WLAN-Kit with 2 antennas 2) 4G antenna kit (without 4G card) 3) DIN-Rail Mounting Kit 4) 2.5" bay for SSD with SATA
Dimensions	120 x 75 x 51 mm (WxDxH) , 460 ml		120 x 75 x 51 mm (WxDxH) , 460 ml
UPC Code	SPCEL02: 887993007212 SPCEL02P: 887993602240	887993007229	887993007243

*) If a WLAN or 4G card is installed, then the M.2-SSD card is limited to M.2-2242 format.
SPCEL12 can be equipped with either a WLAN or 4G function.

SHUTTLE EDGE PC BAREBONE SPCEL12 — SPECIFICATIONS

FANLESS AND SILENT	<p>Completely fanless, virtually noiseless</p> <p>Large aluminium heatsink</p> <p>Passive cooling through convective heat transfer</p> <p>Ideal for noise-sensitive environments</p> <p>Fanless means less dust inside the case and thus virtually no maintenance required.</p>
24/7 NONSTOP OPERATION	<p>This device is approved for 24/7 permanent operation.</p>
CHASSIS	<p>Rugged cassis made of aluminium</p> <p>Colour: purple</p> <p>Dimensions: 120 x 75 x 51 mm (WxDxH) , 460 ml</p> <p>(Height: ca. 53 mm including rubber feet)</p> <p>Weight: 720/970 g net (without/with accessories) and 1.2 kg gross</p>
OPERATION POSITIONS	<p>1) VESA-mounted behind an appropriate monitor (supports 100x100 mm VESA standard)</p> <p>2) Standing on its rubber feet like a desktop PC</p>
OPERATING SYSTEM	<p>This system comes without operating system.</p> <p>It is compatible with:</p> <ul style="list-style-type: none"> - Windows 10/11 (64-bit) - Linux (64-bit) <p>Download Windows-10/11 drivers here: https://go.shuttle.eu/SPCEL12</p>
PROCESSOR	<p>Intel® Celeron® Prozessor J6412, Quad Core</p> <p>CPU clock frequency: 2.0 GHz, max. Turbo frequency: 2.6 GHz</p> <p>Code name: "Elkhart Lake"</p> <p>10 nm process, FCBGA1493 package (soldered)</p> <p>CPU cores / Threads: 4 / 4</p> <p>L2 Cache: 1.5 MB</p> <p>Thermal Design Power (TDP): 10 W</p> <p>System-on-Chip processor (SoC) with integrated graphics processor, no additional chipset required</p>
PROCESSOR COOLING	<p>Fanless cooling system with passive heat sink, virtually noiseless</p>
INTEGRATED GRAPHICS	<p>The Graphics Processing Unit (GPU) is integrated in the processor.</p> <p>Intel® UHD Graphics (Intel Gen 10), graphics frequency: 400~800 MHz</p> <p>Execution Units (EU): 16, Shader: 128</p> <p>Max. Shared Memory (graphics memory): 8 GB</p> <p>Supports DirectX 12, Intel Quick Sync Video, Shared Memory</p> <p>Codec Support in Hardware: h265 (8-/10-bit), h264, VP8, VP9, AVC (only decoding: AV1, VC-1)</p> <p>The PC features three independent video outputs:</p> <ul style="list-style-type: none"> - 2x HDMI v2.0b - 1x DisplayPort v1.4 <p>All ports support displays with 4K Ultra HD resolution at 3840 x 2160 with 60 Hz refresh rate and multi-channel digital audio over the same cable.</p>
UEFI FIRMWARE	<p>16 MB Flash ROM with AMI UEFI BIOS Firmware</p> <p>Based on the Unified Extensible Firmware Interface (UEFI)</p> <p>Supports Wake-on-LAN (WOL) from S3, S4, S5 ACPI states</p> <p>Supports boot up from external flash memory cards (USB or SD card)</p> <p>Hardware TPM v2.0: Infineon SLB9670VQ2</p>
MEMORY SUPPORT	<p>1x SO-DIMM slots with 260 pins</p> <p>Supports DDR4-3200 (PC4-25600) SDRAM at 1.2V</p> <p>Supports one RAM module with max. 32 GB capacity</p> <p>Supports one unbuffered DIMM module (no ECC)</p>
M.2 SLOT FOR SSD CARDS	<p>M.2-2242/2280 slot with <u>SATA</u> interface</p> <ul style="list-style-type: none"> - supports SSD cards in M.2-2242 format (length: 42 mm) - only supports SSD cards in M.2-2280 format (length: 80 mm) if <u>no WLAN or 4G card</u> is installed - only supports SSD cards with SATA interface (not PCIe/NVMe)

M.2 SLOTS FOR WLAN OR 4G CARDS	<p>The Edge PC can be equipped with <u>either a WLAN or 4G function</u>. Two slots are available for this purpose, which are stacked one above the other:</p> <ol style="list-style-type: none"> 1) M.2-2230 E-Key slot for WLAN cards in 22 x 30 mm format (W x L) 2) M.2-3042 B-Key slot for 4G cards in 30 x 42 mm format (W x L) <p>Notes:</p> <ol style="list-style-type: none"> 1) For thermal reasons, only one slot may be populated at a time. There are also only two perforations (holes) for external antennas. 2) The antenna cables should ideally be 10 cm long. Shuttle offer the optional WLAN accessory kit "WLN-M3" (including Wi-Fi 6 WLAN card and two antennas with cables) 3) If a WLAN or 4G card is installed, the M.2 SSD card is limited to the M.2-2242 format with a length of 42 mm. 4) If a 4G card is installed, this is used in combination with the nano SIM slot located on the back of the Edge PC. 5) The M.2-2230 slot also supports an AI accelerator module for AI applications [1]
DUAL 2.5G LAN	<p>Dual network with two RJ45 ports with two status LEDs each</p> <p>Used network chips: 2x Intel i226-V Ethernet Controller (PCIe)</p> <p>Supports 100 / 1.000 / 2.500 MBit/s operation</p> <p>Supports WAKE ON LAN (WOL)</p> <p>Supports network boot by Preboot eXecution Environment (PXE)</p>
AUDIO	<p>Audio Realtek® ALC888-VD High-Definition Audio</p> <p>Two analog audio connectors (3.5 mm) on the back panel:</p> <ol style="list-style-type: none"> 1) 2-channel line-out (head-phones) 2) microphone input <p>Digital multi-channel audio output: by HDMI and DisplayPort</p>
FRONT PANEL CONNECTORS	<ul style="list-style-type: none"> - Power Button - Power LED - 2x HDMI 2.0b - 1x DisplayPort 1.4 - 2x USB 3.2 Gen 2 Type A (max. 10 Gbps) - USB 2.0 Type A - 2.5G network port (LAN, RJ45) - DC input for 2.5/5.5 mm barrel plug supports 12-20 V voltage range
BACK PANEL CONNECTORS	<ul style="list-style-type: none"> - 2.5G network port (LAN, RJ45) - Microphone input - Audio Line-out (headphones) - Micro SD card reader slot - Slot for Nano SIM card (if a 4G card and antennas have been installed) - 2x perforated 6.5 mm holes for optional WLAN or 4G antennas
DC-INPUT CONNECTOR	<p>The DC input supports standard power adapters with 5.5 / 2.5 mm barrel plugs (outer / inner diameter) and supports a wide voltage range from 12 to 20 V.</p> <p>Required output wattage of the power source: ≥65 W.</p>
POWER ADAPTER	<p>External 65 W power adapter (fanless)</p> <p>Input: 100~240 V AC, 50/60 Hz, max. 1.6 A</p> <p>Output: 19 V DC, 3.42 A, max. 65 W</p> <p>DC Connector: 5.5/2.5 mm (outer/inner diameter)</p> <p>AC mains cable: 3 pins, ca. 1.7 m length, with C5/C6 coupler (called "Mickey Mouse" or "Clover-leaf") for the power adapter and CEE-7/7 plug with earth-contact (type E+F) for the power outlet</p>
SUPPLIED ACCESSORIES	<ul style="list-style-type: none"> - Multi-language user guide (EN, DE, FR, ES, JP, RU, SC, TC) - VESA Mount supports 100 x 100 mm standard - Three black screws M3 x 6 mm for the VESA mount - Two thermal pads for a single-side or double-side RAM module <p>Note: additional thermal pads are already installed</p> <ul style="list-style-type: none"> - External 65 W power adapter with power cord <p>Note: a Driver-DVD is <u>not</u> included in the scope of delivery.</p> <p>Download Windows-10/11 drivers here: https://go.shuttle.eu/SPCEL12</p>
OPTIONAL ACCESSORIES	<ol style="list-style-type: none"> 1) WLN-M3: WLAN kit including Wi-Fi 6 card (M.2-2230), 2x antenna cable (10 cm), 2x external antennas 2) CLT02: Antenna kit for 4G expansion consisting of 2 antennas and 2 antenna cables 10cm (not included: M.2-3042 4G/LTE card and nano SIM card) 3) MDR02: DIN-Rail clip for mounting the Edge-PC SPCEL12 on a DIN-Rail, e.g. in control cabinets. 4) HDD01: additional 2.5" bay for a SSD drive with SATA interface

ENVIRONMENTAL SPECIFICATIONS

Operating temperature range: 0 - 40 °C (32 - 104 °F)
Relative humidity range: 20 - 80 % (non-condensing)
Warning: Never touch the heatsink during or just after operation, as it can get very hot during normal operation. Be sure to wait for the heatsink to cool off before touching it.

CERTIFICATIONS / COMPLIANCE

EMI: CE, FCC Class A, VCCI, BSMI, EN 50121-3-2
Safety: CB/IEC 62368-1:2014/2018, cTUVus / UL62368-1:2019, BSMI
Vibration and Shock: EN61373, MIL-STD-810G
This device is classed as a technical information equipment (ITE) in class B and is intended for use in living room and office. The CE-mark approves the conformity by the EU directives:
(1) 2014/30/EU relating to electromagnetic compatibility (EMC)
(2) 2014/35/EU relating to Electrical Equipment designed for use within certain voltage limits (LVD)
(3) 2009/125/EC relating to eco design requirements for energy-related products (ErP)

Footnotes:

[1] Supports AI accelerator module for AI applications

The M.2-2230 slot of this Edge PC can also be used with an AI accelerator module instead of a WLAN card. The following AI module was successfully tested:

Model: Hailo-8

- Form factor: M.2-2230 Key A+E
- Interface: PCIe Gen-3.0, 2 lanes
- AI compute power: 26 Tera-Operations Per Second (TOPS)
- Typical TDP: 2.5 W

<https://hailo.ai/products/ai-accelerators/hailo-8-ai-accelerator/#hailo8-overview>

